typically using a nut that screws onto the bolt. In this way the tooth is mounted on the rotor.

There are two forces acting on the tooth that are of importance in this context. The first is the sheer force that prevents the tooth from slipping around the rotor and that arises because the tooth is not in the plane of the rotor. The second force is the bending moment which is a function of the distance between the fixing means and the cutting tip. In the example shown in US-A-6550504 the cutting tips are positioned considerably out of the plane of the rotor and therefore the bolt that attaches the tooth to the rotor will experience both the bending moment caused by the distance between the tip and the bolt and, in addition, the sheer force acting across the bolt.

US-B-6546977 discloses a stump grinding device that reduces the force on the bolt by providing a cutting unit that is disposed in the plane of the rotor. Therefore the bending moment is considerably reduced in comparison with the example shown in US-A-06550504. However, the sheer force across the bolt remains the means by which the force is transferred from the cutting tip to the rotor.

US-B-6375106 discloses a machine that is designed to reduce waste by grinding. Although this is not the same technical field as the other art, some similar problems will be encountered. The teeth are replaceable and, unlike the previously discussed prior art, the attachment device is in the plane of the rotor. However, the tortuous cross section of the attachment device and locking element result in considerable stresses on certain parts of the interface between the rotor and the cutting tip.

According to the present invention there is provided a tooth for use in a grinding wheel, the tooth comprising

a main body including a slot comprising two substantially planar surfaces for, in use, engaging with a slot in the rotor,

at least one cutting face connected to and extending away from the main body;

wherein, in use, the force in the plane of the rotor is transferred onto the rotor via one of the planar surfaces provided on the slot; and

wherein the cutting face includes at least two tips which are perpendicular to each other

The slot allows for the use of a single low cost bolt to keep the tooth in place. The multi-tipped tooth may also have protruding transverse tips to facilitate lateral grinding, in addition to radial tips. Such a multi-tipped tooth allows for cutting in radial and lateral directions simultaneously.

CLAIMS

1. A tooth for use in a grinding wheel, the tooth comprising

a main body including a slot comprising two substantially planar surfaces for, in use, engaging with a slot in the rotor,

at least one cutting face connected to and extending away from the main body;

wherein, in use, the force in the plane of the rotor is transferred onto the rotor via one of the planar surfaces provided on the slot; and

wherein the cutting face includes at least two tips which are perpendicular to each other.

2. A tooth according to claim 1, further comprising a channel in its back face.

3. A tooth according to any of the preceding claims, further comprising a through hole that interfaces with one of a plurality of through holes provided in the rotor when the tooth is located in one of the slots in the rotor.

4. A grinding unit for use with a grinding machine, the unit comprising:

a rotor having a rim around which a plurality of slots are provided;

a plurality of teeth, according to claims 1 to 3; and

fixing means for retaining each tooth in its associated slot in the rotor.

5. A grinding unit according to claim 4, wherein the radius of the rotor varies around the circumference.

6. A grinding unit according to claim 4 or claim 5, wherein the rotor is polygonal.

7. A grinding unit according to claim 6, wherein the polygon shape is irregular.

8. A grinding unit according to either claim 6 or claim 7, wherein the rotor has an even number of sides.

9. A grinding unit according any of claims 6 to 8, wherein each slot is provided at a corner of the polygon.

10. A grinding unit according to claim 8, wherein the slots are arranged in diametrically opposed pairs.

11. A grinding unit according to claim 10, wherein the slots in an opposing pair of slots are the same distance from the axis.

12. A grinding unit according to any one of claims 8 to 10, wherein the number of slots is 4, 6, 8, 10 or 12.

13. A grinding unit according to any one of the claims 4 to 12, wherein at least one slot is angled towards the axis of rotation of the rotor.

14. A grinding unit according to any one of claims 4 to 12, wherein at least one slot is angled away from the axis of rotation of the rotor.

15. A grinding unit according to any one of claims 12 to 14, wherein the slots are arranged in two diametrically opposed series, each successive slot in each series having an increased distance from the axis in the direction in which the rotor rotates, in use.

16. A grinding unit according to any of claims 4 to 15, wherein the fixing means is a nut and bolt, the bolt passing through the aligned through holes in the rotor and the respective tooth.